

CLAIMS

What is claimed is:

1. A system that facilitates determining presence of an object, comprising:
 - a transmit component that transmits a multicast-type message as a unicast message to the object, the object having a timeout period associated therewith; and
 - a presence component that monitors a response to the unicast message from the object, and if a response is not received, the object is presumed to be off-line.
2. The system of claim 1, the object is at least one of a wired device, a wireless device, and a service.
3. The system of claim 1, the multicast-type message is transmitted in unicast at least once before the timeout period expires.
4. The system of claim 1, a plurality of the multicast-type messages are transmitted in unicast to the object to control the object.
5. The system of claim 4, the plurality of multicast-type messages signal the object to stay online.
6. The system of claim 1, at least one of the transmit component and the presence component is part of a client application that transmits the multicast-type message in unicast and receives the response in unicast form the object.
7. The system of claim 1, the object is disposed on a network remote from the transmit and presence components.
8. The system of claim 1, the unicast response is cached at the system-end.

9. The system of claim 1, the multicast-type message is directed to at least one of the object, an embedded device of the object, and an embedded service of the object.

10. The system of claim 1, the multicast-type message is sent a predetermined number of times before the object is determined to be off-line.

11. The system of claim 1, the object is compatible with a plug-and-play architecture.

12. The system of claim 1, the transmit component transmits a plurality of unique multicast-type messages in unicast to a respective plurality of the objects.

13. The system of claim 1, the transmit component transmits a first multicast-type message in unicast to an intermediate device to determine its status before transmitting the multicast-type message in unicast to the object.

14. The system of claim 1, the multicast-type message is transmitted in unicast to the object from a first client application, the response to which indicates a status of the object, and the status of which is announced by the first client application to a second client application.

15. A computer system according to claim 1.

16. A computer readable medium having stored thereon computer executable instructions for carrying out the system of claim 1.

17. A system that facilitates determining presence of an object, comprising:
a client application that seeks status of the object; and
a discovery component associated with the client application that
facilitates discovery of the object *via* a discovery protocol, the protocol comprising:
transmitting a multicast-type message as a unicast message to the
object, the object having a timeout period associated therewith; and
checking for receipt of a response from the object to determine the
status thereof.

18. The system of claim 17, the client application signals the discovery
component to initiate discovery of the object by transmitting the multicast-type message
in unicast to the object.

19. The system of claim 17, the discovery component is part of the client
application.

20. The system of claim 17, the client application is a master browser seeking
the status of a plurality of other browsers.

21. The system of claim 17, the discovery protocol is based upon a universal
plug-and-play architecture that uses at least one of a simple service discovery protocol
and a general event notification architecture protocol.

22. The system of claim 17, the discovery protocol utilizes a network
protocol.

23. The system of claim 22, the network protocol comprises at least one of
TCP/IP, HTTP, NetBEUI, and XML.

24. The system of claim 17, the discovery component operates to discover one
or more of the objects according to a predetermined hierarchy,

25. The system of claim 17, wherein receipt of a response in unicast indicate that the object is on-line and non-receipt of a response indicates that the object is off-line.

26. A method of determining the presence of an object on a network, comprising:

transmitting a multicast-type message in unicast to the object on demand;
style="padding-left: 40px;">checking for receipt of a response from the object to determine the status of the object; and
style="padding-left: 40px;">determining the status of the object based upon receipt or non-receipt of the response.

27. The method of claim 26, further comprising delaying determination of the status of the object until a predetermined number of additional multicast-type messages have been transmitted to the object in unicast.

28. The method of claim 26, further comprising initiating discovery of an intermediary object in response to determining initially that the object is off-line.

29. The method of claim 26, further comprising automatically initiating discovery of a redundant object in response to determining that the object is off-line.

30. The method of claim 26, the object is one of a plurality of interdependent objects such that failure of the object results in failure of the remaining plurality of interdependent objects.

31. The method of claim 30, plurality of interdependent objects are discovered according to a hierarchy such that the object is discovered before the remaining plurality of interdependent objects.

32. The method of claim 26, further comprising signaling the object to stay on-line using at least two of the multicast-type messages sent in unicast to the object.

33. A system that determines the presence of an object on a network, comprising:

- means for monitoring a timeout associated with the object;
- means for transmitting a multicast-type message in unicast to the object on demand before the timeout expires;
- means for checking for receipt of a response from the object to determine the status of the object; and
- means for determining the status of the object based upon receipt or non-receipt of the response.

34. The system of claim 33, further comprising means for caching the status of the object for access by a client application.

35. The system of claim 33, further comprising means for determining a network condition that causes the means for transmitting to transmit the multicast-type message in unicast more frequently based upon worsening network conditions, and to relax the frequency of transmission when the network resume more normal operation.

36. A computer-readable medium having computer-executable instructions for performing a method for determining the presence of an object on a network, the method comprising:

- transmitting a multicast-type message in unicast to the object on demand;
- checking for receipt of a response from the object to determine the status of the object; and
- determining the status of the object based upon receipt or non-receipt of the response.